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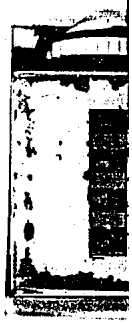
DESIGN MACHINES TO MECHANIZE USSR AGRICULTURE

ASK NEW MACHINES FOR USE IN GROWING VEGETABLES, PREPARING FODDER -- Moscow, Sel-khozmashina, Jul 53

New machines for use in vegetable growing produced in postwar period, such as SOD-24 and SOD-10 tractor- and horse-drawn planters, SR6-M transplanters, SKG-4 checkrow potato planters and fertilizers, and KR-1.8, KON-2.3 and KON-2.8 cultivators, are not adequate for mechanizing even the basic processes in vegetable growing under the varied conditions existing in the USSR.

Complete groups of machine types must be developed which will mechanize each successive task in vegetable growing to the same extent. However, at the same time that designers and technologists are solving this long-range problem, they must quickly organize the production of a large group of new machines for use in vegetable growing which have already been tested and found satisfactory. These machines include the SON-2.8 four-row vegetable planter for mounting on the KhTZ-7 tractor; the KRN-2.8 tractor-mounted cultivator-fertilizer; the KON-2.8P cultivator, hiller, and fertilizer; the RKM-4 four-row transplanter; the IG-9 machine for making peat-humus pots; the DDP-30s trailer sprinkler; the KKR-2 potato harvesting and sacking combine for heavy soils; the ANZh-2 truck-mounted liquid manure sprinkler; a combination duster-sprayer for mounting on the KhTZ-7 tractor; manure loaders for the KhTZ-7 and U-2 tractors; and a manure spreader for the U-2 tractor.

However, the machines mentioned above do not represent all the equipment required to mechanize potato and vegetable growing. In the next 2 years, designers of special design bureaus and VISKhOM (All-Union Scientific Research Institute of Agricultural Machine Building) must develop many new machine designs, including: vegetable planters for regions with excessive rainfall; planters for irrigated vegetable growing; planters for tomatoes and cucurbits; transplanters for checkrow and row planting, both for irrigated regions and for regions with excessive rainfall; special loading and unloading



mechanisms for vegetables and potatoes; machines for harvesting root crops, cabbages, and onions; potato graders; machines for collecting, threshing, cleaning, and drying seeds of vegetable crops; and a number of other special machines.

Agricultural scientific research institutes must draw up standard plans for hothouses and equipment that will fully mechanize hothouse growing of vegetables. The most labor-consuming tasks in vegetable growing are the preparation, loading, and unloading of earth and manure, preparation of straw mats, opening and closing of frames, and planting, watering, and weeding of plants in the frames. Up to now, all these tasks have been done manually, and this lack of mechanization has held up the development of hothouse vegetable production.

To further the growth of animal husbandry, machines for fodder preparation, handling, and storage should be improved, and a greater variety of new machines developed for the new tractors (Belarus', DT-54, DT-55, KhTZ-7, VTZ). New machines must be developed for improving pastures. In the next few years, new types of pickup mowers, side-delivery rakes, press-pickups, and other hay harvesting machines for gathering wet, tall stem, and heavy yield grasses on soft plowed earth must be developed.

STRESS UNIFORM MECHANIZATION OF FARM TASKS -- Moscow, Sel'khozmashina, Aug 53

Comparison of the technical level of agricultural machinery produced by the USSR agricultural machine building industry with foreign-made products shows that Soviet-made farm equipment is as good as, and in many cases better than, machinery produced abroad. However, in view of the increased demands of socialist agriculture, it must be pointed out that some machines produced by USSR industry are still inadequate in certain respects, i.e., wear resistance of working parts such as plowshares, moldboards, and cultivator teeth, and transmission parts such as gears, chains, and sprockets.

External finish of parts and units (i.e., finish produced by casting, machining, or painting) of Soviet machines is not up to foreign standards. These shortcomings should be eliminated as soon as possible.

The USSR agricultural machine building industry and consumers of farm machines have not yet succeeded in developing complete groups of machine types for all-around and uniform mechanization of all consecutive operations involved in growing or harvesting a given crop. Industry is producing various machines for various agricultural tasks, but the productivity of these machines, and hence labor consumption in these tasks, vary within excessively wide limits.

For instance, since 1953, three- and four-bottom trailer plows have been equipped with seats for the plow operator, while three- and four-bottom tractor-mounted plows can be operated by the tractor driver alone. Thus, the calculated productivity of trailer plows for a 10-hour period is as follows: five-bottom, 3.5 hectares; four-bottom, 2.5 hectares; and three-bottom, 1.9 hectares. The corresponding productivity of a three-bottom tractor-mounted plow is 4 hectares in 10 hours.

Differences in the level of mechanization of indivudual processes are especially marked in grain harvesting. After the grain is reaped and threshed by high-productivity combines, gathering of straw and chaff from the fields and cleaning and delivery of grain to the threshing floor are carried out by low-productivity sweep rakes, winnowing fans, and other simple devices.

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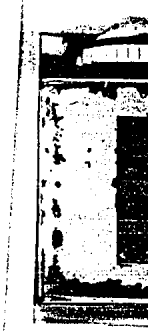

Full mechanization of basic agricultural processes would require, judging by preliminary data, 80 types of new machines. Especially important processes that are not sufficiently organized are the harvesting of potatoes and other vegetables, and the preparation of fodder in animal husbandry.

Labor consumption in potato growing is 15 times as great as in raising grain crops; in cabbage growing, 35 times; tomatoes, 60 times; and bulb onions, 67.5 times.

The full attention of special design bureaus and of VISKhOM should be focused on solving the problems of combine-harvesting potatoes under any soil or weather conditions, and of mechanizing vegetable growing. Harvesting potatoes with simple machines or with the TEK-2 potato digger is no longer acceptable. Preliminary tests show that combine harvesting of potatoes requires one sixth to one seventh the labor consumption of harvesting with the TEK-2 digger.

Spreading of organic and mineral fertilizers, loading and unloading work, and other tasks on the threshing floor are inadequately mechanized.

According to preliminary data, approximately 15 machines of obsolete design included in the 1953 plan must be taken out of production as soon as possible, including: Stalinets-6 combine, ZS-1 stationary grain dryer, ZSP-2 mobile dryer, OS-1 and OS-3 grain cleaners, VS-2 winnowing fan, hand-operated grain cleaners and graders, and the MDU-1 feed grinder.

An important responsibility of VISKhOM, special design bureaus, and plant design bureaus is the unification, normalization, and standardization of parts, units, and basic parameters of agricultural machines. Such standardization should form the basis for developing new designs and improving existing designs of farm machines.

However, the task of building new machines needed to complete the mechanization of basic agricultural processes cannot wait for the creation of complete groups of machine types, development of basic designs, and unification and normalization of machine elements. All of these things should be carried out simultaneously and at an accelerated pace.

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